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February 7, 2025

Re: *United States v. Charlie Javice, et al.*, 23-cr-00251-AKH (S.D.N.Y.)

Dear Counsel:

Pursuant to Federal Rule of Criminal Procedure 16(b)(1)(C), counsel for Ms. Javice provides this second supplemental disclosure regarding Carla Holtze Cell's testimony as an expert witness in Ms. Javice's case-in-chief at trial. This letter supplements Ms. Javice's initial January 6, 2025 disclosure and first supplemental disclosure on February 2, 2025, regarding the testimony of Ms. Holtze Cell.

If called to testify Ms. Holtze Cell will offer explanations of the concepts referenced in Ms. Javice's two prior disclosure letters. As previously indicated, Ms. Holtze Cell may be called to provide necessary explanations and detail regarding concepts that the Government will likely introduce through its witnesses in its case-in-chief. While we cannot predict every issue that may arise and regarding which Ms. Holtze Cell may offer expert testimony to assist the jurors, we anticipate that her testimony would cover the following concepts.

Ms. Holtze Cell will testify about what a website "user" is. That is, she will testify about the many ways that a website user might actually use a website. For instance, someone might type a search query into a search engine, such as Google, and be presented with a range of search results. If a webpage is presented to the person performing the search, Google logs the presentation of the website in the search results as an "impression." If the person clicks on the link for the website, their web browser displays the website, and they become a website user. That user may then interact with the website in any number of ways. A user may simply navigate or "surf" through the different linked webpages and view or read the website's content. A user may also affirmatively supply information about themselves, such as their name, email address, postal address, etc. to the website if requested or in order to access or utilize some service or additional content offered by the site.

Website proprietors utilize a variety of marketing methods to drive users to their site. "Organic traffic" refers to users who reach a website via a query to a search engine or simply type the website's URL address into a web browser. Paid website traffic refers to users who reach a website after clicking on a paid advertisement, such as a banner ad on another website or social media platform. A "backlink" is a hyperlink to Website A on Website B. Search engines recognize backlinks and algorithmically assign value to Website A because Website B has listed the link to

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Website A. This makes it more likely that search engines will return Website A among hits for subject matter searches for the type of content on Website A. Search Engine Optimization ("SEO") is a strategy for increasing a website's visibility among searches keyed into a search engine like Google or Microsoft Bing or Yahoo! Website proprietors often devote significant resources to SEO and increasing user traffic to the website and optimizing website "channels."

> How each user reaches the website is typically tracked by the website proprietor to determine various metrics used to evaluate how effective each method of driving users to a website is. "Keyword search seasonality" refers to the spikes and drop-off of certain terms queried into search engines at different times of year. "CPC" refers to cost-per-click or pay-per-click and refers to the cost to the website proprietor for users who click on a paid advertisement such as through Google Ads to reach the website. "CPV" or cost-per-view is a metric for measuring the cost to the website proprietor for each time a video as part of an advertising campaign is viewed by a potential website user. "CPM" is a fee that the advertisers pay for every 1,000 times their ad is displayed - it doesn't matter if it is clicked or interacted with. It is not performance advertising, it is brand advertising where advertisers are paying for visibility/awareness rather than clicks to their sites or for performance (CPC or Cost Per Action, "CPA"). refers to cost-per-impression, a cost that a website can incur through an advertising strategy in which it is charged for each time a link to its website is displayed to a potential user. "CPE" refers to the cost-per-engagement whereby advertisers pay each time a user engages with an ad, which could be a like, repost, share, comment or other interactions. "CAC" refers to customer acquisition cost and measures the average cost for a website to acquire a customer, the definition of which is determined by the website proprietor. "Retargeting" or "remarketing" refers to a digital marketing strategy in which a user who has previously interacted with a website is targeted with an ad in order to get them to reengage with the website. A website may also try to drive users to the site by conducting an email marketing campaign to known or potential website users. Flat Rate or Sponsored Content Ads are a branding mechanism for advertisers whereby they will pay content proprietors a flat fee in exchange for featuring an ad for a certain duration of time or a guaranteed number of clicks. In determining how best to deploy marketing resources, each of these methods are evaluated as part of a digital marketing strategy to make sure that a website has the right "marketing mix" of the available digital marketing strategies. A digital marketing goal is to create a "flywheel" effect in which digital growth and momentum are self-perpetuating through engaged user response and interaction with the website, its content and its marketing strategy.

A website's "funnel" refers to the path which users can follow or are guided on a website to direct them to certain content or convert them into more engaged users. The stages of a website funnel from top to bottom include 1) Awareness: introduce user to your offering 2) Interest: provide content to engage 3) Consideration: get user to be serious about your offering 4) Conversion: convert user to customer or lead 5) Retention: keep the customer / user returning and if relevant, purchasing or deeper engagement. The funnel guides users on a customer or user "journey" or "experience," which is tracked using the following metrics to gauge efficacy of the funnel: Traffic (new vs. returning); Bounce Rate (users who leave without engaging); Exit Rate (users that leave

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from a specific page); Time on Page (average number time user spends on page); Page Views per Session (Average number of pages a user visits during a session) and Click-Thru Rate or CTR (percentage of users who click a link or ad; Conversion Rate (percentage of users who complete goal of the site whether it be registration or purchase); Goal Completions (how successful the website is at achieving objectives); Funnel Drop off Rate (percentage of users who leave the journey at a specific stage); Path Length (number of steps a user takes to reach its goal); User Flow (path to achieve more effective conversion on a website); Engagement Metrics (measure of interaction with website); Average Session Duration (average length of session); Scroll Depth (how far users scroll on page); Customer Satisfaction (user feedback). There are several tools to measure these analytics including Google Analytics, Hotjar, Mixpanel and Optimizely. Some use heatmaps, visualizations, offer A/B testing and offer advanced event tracking.

Website proprietors often avail of resources like Google Analytics to glean information about their website's traffic and its users. Google Analytics provides a Tracking ID and a Global Site Tag which website proprietors can place on their pages to allow them to track attributes and information about users and how those users interact with a website. Given its dominance as the leading internet search engine, Google collects a staggering amount of information about users of its search engine which it then combines with information about specific website users. Google utilizes a technology known as a "third-party cookie," which is a small identifier that it places on a user's device, whether a smartphone or computer. That cookie is identified by Google whenever the user browses a website or performs an internet search. Google stores an anonymized version of a user's Internet Protocol or "IP" address but does not share the website user's IP address with its customers. An IP address is a numeric serial number or digital signature that identifies the digital and physical location of the user. IP addresses are assigned to devices by internet service providers. IP addresses may be static or dynamic. A static IP address remains the same and is assigned permanently or semi-permanently to a specific user or device, whereas a dynamic IP address may be reassigned routinely to different users by an internet service provider.

While Google Analytics collects a vast amount of information about its users, it may provide only a subset of that information and user attributes to website proprietors, such as users' activity on the website, geolocation of the users as well as gender and age, depending on, among other things, the terms of contractual arrangements between Google and the proprietor(s) in question. Google Analytics can provide detailed information about website user traffic, such as how often a website's hyperlink shows up in search engine search results, how often users arrive at the website, how the users arrived at the website (*e.g.,* from a search engine search result, from a social media page link, email link, etc.), how many and which pages on the site they viewed and for how long, as well as what device they viewed the site with and with what operating system. Google Analytics provides details Behavioral Insights of user traffic which includes "page views," "sessions," "bounce rate," "events," "returning users," the number of "monthly," "weekly" and "daily active users." Google Analytics also provides timestamp and geolocation information concerning the website users' devices and visits, as well as Demographic Information about the user's age range, gender. This information is available to Google Analytics users through a dashboard through which the user information can be viewed with customized viewing and reporting settings. Google Analytics also provides predictive modeling tools through which user data from Google Analytics

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can be combined with existing user data and deductions can be made about current users as well as likely future users. Google Analytics timestamp information can be aggregated and compared with data acquired via separate tools to form website user profiles. For instance, Google's BigQuery tool allows for Google Analytics data to be combined with other datasets and for literally trillions of lines of data to be analyzed.

In addition to the information collected and provided by Google Analytics, websites typically collect their own information about their users by utilizing cookies. As Google Analytics does, websites, either directly or via their website hosting service (*e.g.,* Amazon Web Services, "AWS, "Bluehost, WordPress or GoDaddy), typically deploy first-party and third-party cookies to track user information. First-party cookies are set by the website and relate to that particular website and track a user's activity on that specific website. On the other hand, third-party cookies are placed on a user's device to track that user's activity across different websites. Third-party cookies have been blocked by browsers including Safari and Firefox. Third-party cookies were in the process of being phased out by 2021.

In addition to cookies, information can be ascertained about website users through a technique called "browser fingerprinting." Browser fingerprinting involves obtaining information about the browser and device being used in addition to other details such as the operating system being used, hardware, fonts, browser type, plugins, time zone and other settings that create a signature or "fingerprint" that that allows that user to be tracked. Fingerprinting can also be used for fraud detection and for personalization. Fingerprinting can be very unique and effective if the combination of datapoints used are less common; however, common configurations (e.g. using latest version of Chrome or default settings) can yield an overlap as fingerprints are less unique.

There are various tools available to website users to combine and aggregate data for website users. A Customer Data Platform (CDP) is software that centralizes customer data from many sources to create a unified customer profile to be used for marketing, insights and business planning. Platforms such as Mixpanel, Braze, Datadog, Qualtrics and mParticle integrate with other tools to pull user data from different collection sources and to combine data for identified and anonymous users to build out user profiles from all available information. CDPs use first-party, second-party and third-party data. Examples of CDPs include mParticle, Lytics, Tealium, Salesforce Customer 360. For some users, who supply information directly to the website, existing information may be matched with other data regarding those users. For users who do not directly supply information, what is known about those users from available sources such as cookies, Google Analytics, IP address, etc., can be analyzed to make deductions about who those users are or to develop demographic information about those users without identifying them specifically. CDPs match customer identifiers from different platforms to ensure that a customer profile accurately reflects all interactions. Activation of CDP data can occur across all channels of marketing including email, advertising, social media, customer service, physical mail and personalization of website.

Web users are routinely assigned a Universal Unique Identifier ("UUID"), which is typically a 36-character numeric string unique to a particular user. A UUID can be utilized to track that user's internet and website activity. Similarly, a Universal Marketing ID (UMID) is a unique identifier

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which is created when a user signs up for an account on a website and may be linked to the user's email address or another unique identifier; they are commonly integrated with Data Management Platforms (DMPs) and CDPs to help aggregate customer data across sources.

With whatever information a website collects and aggregates regarding its users from sources available to it, the website proprietor may also "enrich," or "enhance" its data and "augment" it. Many website proprietors endeavor to collect all available information about the website's users and then match the information for those particular users or target users with similar characteristics available from third party data brokers. Data brokers like Epsilon, Experian, Acxiom and TransUnion collect, purchase, and aggregate large amounts of user data from various sources and make that data available for sale. Datasets available from data brokers can be customized to meet certain user parameters, such as location, age, gender, income level and other interests as well as tracked website activity. Many companies use data brokers to enhance or enrich their existing user data, to obtain more information about their existing users, and/or to determine, based on known information, what the characteristics of future users are likely to be and even who precisely are likely to be those future users.

Data augmentation can mean different things. Some practitioners use it to mean the same thing as data enrichment or enhancement, *i.e.*, obtaining additional information about current users for whom only a limited amount of information is known. Data augmentation also refers to a process of analyzing an existing dataset of website users to make informed predictions about unknown characteristics about those users based on what is known about them.

Synthetic data serves a variety of functions. Taking an existing dataset and converting it to representative synthetic data is often used to protect personally identifiable information ("PII") by creating a set that mirrors representative characteristics while protecting against the revelation of actual PII. Synthetic data modeling, also known as "attribute modeling" or "lookalike modeling," is an analytic technique used to identify properties and characteristics that are common to and representative of the members of a dataset. This analysis is useful to identify the characteristics of the existing dataset and to make informed predictions based on those common properties and characteristics about who may share those properties and characteristics. The number of those properties or characteristics made part of the analysis will determine the degree of accuracy and value of the ultimate synthetic dataset.

There are a number of publicly accessible resources, in additional to Google Analytics, that can be consulted to learn about a website's historic user traffic. Resources, such as Similarweb and Semrush, provide detail about website traffic, its ebb and flow over time, specific pages viewed, how the users arrived at the site, how long they spent on the site, etc., and broader view of the landscape by offering insights on competitors, benchmarks and sources that go beyond your own website. In addition, those tools provide audience insights for the website including demographics, interests and engagement patterns. It also provides competitor information and keyword analysis to help understand market trends and broad traffic patterns. That is, Google Analytics is not an exclusive provider or supplier of website analytic information – several providers supply nearly identical information, which is readily available to the public.

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Digital marketing plans often employ a strategy called affiliate marketing, in which a business rewards a third-party, oftentimes a content creator or publisher, for driving traffic or sales (conversions) for that business. In this situation, typically the content creator will include affiliated links inside of content to products that endorse and promote a user to take an action to click upon or purchase. Content providers can supplement their ad sales with affiliate marketing as they earn on a CPC (Cost per Click) or CPA (Cost per Action) basis.

Ms. Javice reserves the right to further supplement and/or amend this disclosure, including in response to the government's ongoing supplementation of its exhibits and/or witness lists as well as evidence presented in the government's case-in-chief.

Very truly yours,

/s/ Eóin P. Beirne
Eóin P. Beirne

Reviewed and approved as to
anticipated testimony by:

/s/ Carla Holtze Cell
Carla Holtze Cell